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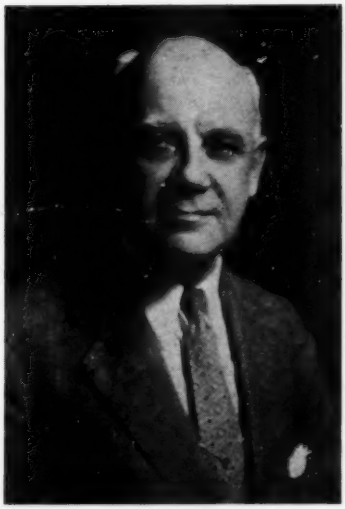

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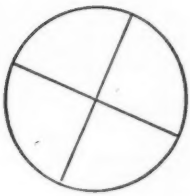

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[1]Harris, S. C.; Ivy, A. C., and Searle, L. M.: THE MECHANISM OF AMPHETAMINE-INDUCED LOSS OF WEIGHT: A Consideration of the Theory of Hunger and Appetite, J.A.M.A. 134:1468 (Aug. 23) 1947.

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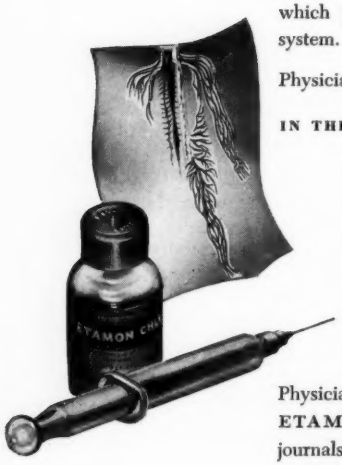

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CONTENTS

Dr. Charles E. Vanderkleed, Procter Medalist 1948 2

Editorial:

Raw Materials 3

Articles:

The Healing of Metabolic Wounds. By V. Wuerthele-Caspe and Saul Caspe 6

Survivals of Magic in Modern Medicine. By D. M. Dunlop 11

A Remarkable Bean is the Soy. By T. Swann Harding ... 18

Selected Abstracts 24

Book Reviews 30

DR. CHARLES E. VANDERKLEED

Procter Medalist 1948

THE selection of Dr. Vanderkleed as the recipient of the Procter Medal by the Philadelphia Drug Exchange cannot but receive universal indorsement.

Dr. Vanderkleed is one of those men in American Pharmacy who for several decades has served pharmacy, his country and his fellowman with distinction. He graduated in pharmacy from Purdue University in 1875 and joined the instructional corps as a graduate assistant about a year later, receiving in due time the Ph. C., the B. Sc. and the A. C. degrees. In 1901 he became an analytical chemist for Sharp and Dohme, of Baltimore, moving to Philadelphia in 1902 to become chief chemist for the H. K. Mulford Co. During the latter part of his long association with this company Dr. Vanderkleed lectured at the Medico-Chirurgical College and finally at the Philadelphia College of Pharmacy after the merger of these two institutions.

Following World War I Dr. Vanderkleed became associated with the McNeil Laboratories of Philadelphia where today he is its Scientific Director and a Vice-President.

Dr. Vanderkleed has attained the highest stature as an expert in the field of drug standardization and legislation and his service to the drug industry in this direction is known the country over.

Honors and honorary degrees have come to him for this outstanding service and now the "Procter Medal" bearing the likeness of "the Father of American Pharmacy" and awarded "for distinguished services in the professions that contribute to the alleviation of human suffering."

Possibly no more valid an indoresment of this honor could have been given than the telegram sent Dr. Vanderkleed by the faculty of that old and honorable institution which Procter served so many years. It read "Procter himself would be happy to see one so deserving receive the medal bearing his name. Our entire faculty salutes you on this happy occasion."

E D I T O R I A L

RAW MATERIALS

THE current shortage of fuel oil will serve at least one useful purpose if it makes the American public conscious of the fact that our natural resources are not inexhaustible. The complacency found in the average citizen about such matters and the smug contentment which he shows is exasperating to anyone who realizes the real situation.

The majority of Americans today have the idea that the United States by reason of its being literally a land of mental giants is invincible and that our success in World Wars I and II was attributable solely to our superiority of *men.* Granted Americans as a whole may be more highly trained in the mechanical arts and somewhat more literate than some of more backward people of the world, but this superiority is only superficial; it is not based on any real difference in intrinsic intelligence or capacity. No scientist today believes in the concept of a "superior" race or nation.

There is no question but that our forefathers who settled this country were men of courage and resourcefulness. The thing, however, that crowned their efforts with success was the virgin territory that they found waiting to be exploited. Had America been found a desert waste would we today be so powerful and strong? The thing that we must face is the realization that our strength lies in our raw materials as well as our human potential. Our raw materials are our farm and grazing land, our forests, our ores, coal and petroleum. The way that we have spent and wasted these is a crime against humanity.

In World War II 8,000,000,000 barrels of petroleum and 5,000,000,000 tons of minerals were consumed forever. This amount in normal times would have lasted for generations. Although we contributed 60 per cent of the petroleum we control only 36 per cent of the world's proven reserves. The United States today has less than a twenty-year peacetime supply of petroleum in proven reserves. We have dissipated our high grade copper ores until this essential material is practically extinct. Secretary Krug, of the Department of the

Interior, recently reported that we have less than a thirty-five year supply of twenty-one important minerals! This in a land that was once believed to be inexhaustibly rich.

Our arable land is likewise being wasted by continuous erosion. Almost 300,000,000 acres of our farm land and grazing land has been lost. It requires an estimated 2½ acres of land per capita to provide a minimum adequate diet. It is for this reason that millions starve annually in the overpopulated countries of the world. In spite of this the population of the world continues to increase, guaranteeing to millions a death just as horrible as cancer—starvation. Even in the "enlightened" United States our population is increasing rapidly while farm land is being lost. All this points to future poverty, hunger and distress for tomorrow.

Puerto Rico is today a classic example of the poverty that stems from a population far in excess of the required natural resources. Here the population is such that there are two people for every arable acre. What is the result? The average Puerto Rican gets less than a third of the protein diet of a citizen of the continental United States and four-fifths of the workers average less than ten dollars a week income. All this can happen here if the time comes that our natural resources are small compared with our population, and already we are near the bottom of the barrel in certain respects.

What should we do? First, immediately accept the advice of the men like the great statesman Baruch and buy freely the non-perishable raw materials on the world-market. This will help other countries who need our dollars desperately and help us by supplying us with true wealth of far greater value than all the gold at Fort Knox. Gold is actually of little real value. It is only because we as a nation treasure it that it is in demand. Should the time come that no one offers goods and services in exchange for it gold will be worth little indeed.

We should also make every effort through national planning by those far-sighted men who see this problem in broad perspective to conserve the natural resources which remain.

The other but equally important approach to the problem lies in the reversal of the current concept that the greater our population the stronger we shall be as a nation. Time was when manpower was the prime objective. Today it is raw material to feed the machines that counts most and these need few if any men to operate

them. Manpower today is important in the qualitative sense rather than the quantitative. Although there is a valid moral argument for admitting many of the displaced persons in Europe to America, there is no justification for the encouragement of prolific human fecundity to the point that we, some day, shall suffer the same fate as China and India.

The dogma that man was intended to reproduce at the maximum level is so senseless that it needs no refutation. Only the uneducated or feebleminded pursue such a course today, for it is obviously impossible to feed, clothe, educate and otherwise care for a large number of children in a proper manner.

If the United States approaches these problems using the scientific method, getting the facts and then proceeding in the manner indicated, we may be spared the tragedy of becoming a "have not" nation and seeing our glory and power trampled in the dust. To believe that we are the greatest nation on earth and that we shall always be strong and powerful, regardless of our actions, is not to court disaster but to guarantee it. Such disaster will not come to some far-distant future generation about which we need not worry but to ourselves and our children.

L. F. Tice.

THE HEALING OF METABOLIC WOUNDS

By Virginia Wuerthele-Caspe,* M. D. and Saul Caspe

THE proliferative response of cells to a respiratory enzyme system and creatine in tissue culture (1) stimulated us to study the therapeutic value of these biologicals in the healing of a variety of wounds whose subjects lack the proper enzyme and creatine level necessary to induce normal healing. This is a preliminary report of a few cases referred to us because they presented persistent wounds resistant to all recognized methods of treatment. After a more thorough investigation, we hope to show diagnostically why certain wounds fail to heal but for the time being we are presenting the positive results already obtained. Application of respiratory enzyme-creatine solution to wounds opens up a new vista for the study of this tantalizing problem.

Case 1

O. F., a white female, age thirty-eight, housekeeper, unmarried, had a normal history until ten years ago when she visited a local physician because of a vaginal discharge. Her condition was described as erosion of the cervix which was treated with a great variety of agents: silver nitrate, electro-cautery, gentian violet, sulfonamides, penicillin, floraquin, silver picrate, and douches. There was always temporary healing but the mucous membrane was tissue-paper thin and criss-crossed with dilated vessels. A complete hysterectomy was performed at which time the pathologist reported metaplasia of tubes and ovaries, a hyperplastic endometrium, chronic hypertrophic metritis and chronic erosion and cystic cervicitis. Surgical healing proceeded normally at four weeks postoperative but a circular ulcer about 7 cm.^{2} appeared upon the mucous membrane of the right vaginal vault. By the use of Negatan it was possible to determine the size of this ulcer. This wound was not related to the line of sutures. All the usual medication was tried again without success. X-ray or radium therapy was considered but as a last resort enzyme-creatine treatment was instituted on 11/8/46. One-half cc. was injected into the muscle of the deltoid region 3 times a week. Visual in-

* 560 Mt. Prospect Ave., Newark, New Jersey.

spection as well as Negatan depositions indicated that healing was occurring. The wound was completely healed in one and one-half months. Because of the hysterectomy small amounts of estrogenic hormone were given at the end after the wound was completely healed. The patent was examined 4/3/47 and 6/26/47 and she is still completely healed.

Case 2

G. L., a white female, age 30, married, librarian, had a marked secondary achromic anemia for 6 years. She was referred to Dr. Paul Reznikoff at New York Hospital who found that the anemia was not hematogenous in origin. Occult blood was found in the gastric contents and the stool and her basal metabolism was —23. The source of the blood loss was undetermined. Iron and high vitamin treatment kept her blood count and hemoglobin under control but continuous pain over the sigmoid region still occurred. She was hospitalized at the Presbyterian Hospital in Newark where a complete gastrointestinal study including X-rays was done and a gastroenterologist saw her in consultation. Aside from pain over the sigmoid, prolapsis recti and hemorrhoids everything was negative. She continued to observe bloody (occult) stools. She returned home and continued to suffer pain over the left sigmoid. One-half cc. of enzyme-creatine solution was injected intramuscularly into the deltoid region every other day. After 4 injections she was seized with violent pain over the left sigmoid and passed what appeared to be a two-inch segment of intestinal mucous membrane. She was given sedation and a sigmoidoscopic examination was negative for it did not reach the site of the pain. From this time on there was a diminution of pain and a complete return to health within 3 months. Her stool is normal and she is no longer constipated.

Case 3

R. R., a white male, diabetic, age 57, was admitted to City Hospital, Newark 12/6/45 with a gangrenous toe and his great toe was amputated 3/6/46. From 12/30/45 to 1/7/46 there was noted a foul smelling and purulent drainage. He was treated from 12/30/45 to 12/6/46 with the following medicaments: azochloramide, 1-3,000 wet dressing, Burow's solution, hydrogen peroxide, alcohol, vaseline gauze, aluminum acetate, magnesium sulfate, iodoform, sulfanilamide

directly into wound followed by penicillin as a dressing and parenterally, silver nitrate stick applied to wound, boric acid and magnesium sulfate, and extensively with Balsam of Peru. There was no improvement noted in the 9 months post-amputation period of treatment.

Dr. H. Schulte referred the case to us on 12/7/46. At that time the wound left by amputation was approximately 10 cm.^{2} and a wound observed on his middle toe was approximately 1½ cm.^{2} with a necrotic narrow diametric cut extending to the 3rd metatarsal bone. The large wound was very deep and was filled with a foul-smelling purulent exudate. One-half cc. of enzyme-creatine solution was injected every other day intramuscularly into the deltoid region and the dose was increased to 1 cc. given every other day after Dec. 19. Gradual but continued proliferation was noted after the first week of treatment. By 1/30/47 the middle toe completely healed and in approximately 3 months the great toe amputation wound was completely healed. The foul-smelling purulent exudate subsided during the last month of treatment as healing continued, and the undermined tissue and pockets filled in with freshly formed granulating tissue and the slough diminished. R. R. also has a yellowed, scaly, dry skin. Throughout the enzyme treatment the wound was cleaned at frequent intervals 2 or 3 times a week with only hydrogen peroxide. The healed wound was exhibited to the staff physicians at the City Hospital, Newark. Since R. R. was fifty-eight years old and diabetic, healing was naturally slow.

The case was referred to us by Dr. H. Schulte after all other treatments had failed and hope was virtually abandoned. It is now eight months since the patient was discharged from the hospital and his wounds are still completely healed. This treatment saved him from a possible mid-thigh amputation which would have become a surgical necessity.*

Case 4

A. S. B., male, forty-six years, engineer, suffered from second and third degree burns in 1914 and was confined for 11 months. The wounds were healed with exception of an area 4" long above the right ankle. Between 1917 and 1918 this open area was closed by pinch

* Dr. B. Davidson of Brooklyn was the first to treat non-healing diabetic wounds successfully, using our preparation. He is continuing his studies.

and strip grafts. In 1941 an infection developed from a minor injury and a leg ulcer 1½" in diameter healed completely upon use of ZPO. From 1921-1946 the patient experienced severe chapping and in Feb. 1946 a chapped spot became infected. Within 8 months 5 ulcers ranging from ¾" to 2" in diameter developed with ejected bone spicules. An X-ray showed between 20 and 30 calcium deposits scattered circumferentially. The patient was hospitalized and unhealthy tissue was cut away. Infection flared from lower leg to hip. Sulfonamides and penicillin were given but two additional ulcers occurred. A Thiersch graft was performed and rapid healing occurred of four ulcers; but the two more recent ulcers as well as one large ulcer remained.

A. S. B. was discharged from hospital on December 23, 1946. The small ulcers continued to enlarge. On February 1, 1947 local application and intramuscular injection of ½ cc. of enzyme-creatine solution was administered on alternate days. The smallest ulcer healed and a rapid improvement in appearance of the other ulcers was observed; however, there continued a discharge and general signs of infection. A culture showed hemolytic streptococci, staphylocci and Gram negative rods. Through the cooperation of Dr. F. L. Meleney, bacitracin and parachlorphenol were applied to the wounds from March 15 to April 15 when the patient became clear of infection. On May 15 he was grafted again and beginning June 5 intramuscular injection of ½ cc. of enzyme-creatine solution on alternate days was started. Continuous and gradual healing was occurring although an infection developed during July and somewhat retarded it. The large ulcer when last observed on August 5 was ¼" x ¼" and the color was good, the edges having a thin red line of advancing skin. By the end of August this ulcer was completely healed.

Case 5

H. M., a white female diabetic, age eighty-two, had a history of diabetes for seventeen years, and has been taking insulin regularly.

As a result of a fall her knee was cut and several pustules appeared around the knee cap. Penicillin ointment was applied upon this sore area and then ½ cc. of enzyme-creatine solution was injected intramuscularly for three successive days, and twice a week thereafter. Noticeable improvement was observed in a few days and complete healing was effected in 2-3 weeks.

Acknowledgment

The authors express their gratitude to Dr. Herbert A. Schulte for permitting us to treat Case 3 and to Dr. Stuart Z. Hawkes for his continued interest and cooperation in enzyme-creatine treatment in connection with Case 4. We are indebted to Dr. E. H. Snavely, Medical Director of the Newark City Hospital, for his cooperation in extending us the privilege and facilities of his institution in treating Case 3. We are thankful and appreciative of the help given us by Dr. Frank L. Meleney of the Presbyterian Hospital, New York City, in his treatment of Case 4 with bacitracin and his suggesting the continued use of our healing accelerator, the enzyme-creatine solution.

REFERENCE

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SURVIVALS OF MAGIC IN MODERN MEDICINE *

By D. M. Dunlop, M. D., M. R. C. P., F. R. S.**

IN the early days of human history medicine was almost entirely a matter of magic and superstition. From this it was partially rescued by Hippocrates in the fifth century B. C., but plumped back again very shortly afterwards to enjoy its long magical sleep throughout the Dark Ages. Perhaps more than anyone else it was Galileo who was responsible for the scientific renaissance. During the succeeding years science owed its remarkable progress very largely to doubting all things, even those upon which action has been based. Thus Newton's law of gravitation had reigned so long and explained so much that it seemed scarcely credible that it should stand in need of correction. Nevertheless as the result of Einstein's discoveries, such correction has at last proved necessary, and no one doubts that even this correction will, in its turn, have to be corrected. The advance of science has thus in some respects been a little like the growth of the British Constitution through the web of which the woof of doubt has continually run, refusing to deprive the other side of a chance. On the whole the opposite has been the case in other walks of life and in the politics of other countries, where the deductive method has ruled. Here has been the sacred book, the heresy hunt, the solemn excommunication by bell, book and candle. Here one intellectual certainty has replaced another at the expense of a sufficient number of martyrs; and so long as education aims at inculcating dogmas and slogans religious, political, ethical and medical, fresh relays of martyrs will be necessary for every step of human progress. While I do not suggest that humanity will ever be able to dispense with its martyrs, I cannot avoid the suspicion that with a little more thought and a little less passionate belief, their number might be substantially reduced.

The Need for Scientific Reason

But the scientific method is still most unnatural to man. It is still only employed by a tiny minority of people, who themselves confine its employment to a tiny minority of questions. Of recent years

* Reprinted from *The Pharmaceutical Journal 105*:317 (1947).
** Department of Therapeutics, University of Edinburgh.

indeed there has been a widespread loss of confidence in the power of reason. The majority of our opinions are simply wishful filaments, like dreams in the Freudian theory, and the mind of the most rational may be compared to a stormy ocean of passionate convictions based upon desire, upon which float perilously a few little boats carrying a small cargo of scientifically tested beliefs. Nor is this entirely to be deplored. Life has to be lived and time is too short to test rationally all the beliefs by which our conduct is regulated. But in regard to medicine it is much to be desired that the art should be tempered much more than it is by a wholesome dose of scientific reason.

In respect of medicine, however, this is just what most patients do not want. Like Lot's wife, they are all too prone to look back, longing to return to the past with its ritual and its magic. When disease arises with its toxic influences it is the highest centers of the nervous system which are most easily poisoned, just as they are by alcohol, and then the primitive man creeps out of the cave in which reason has shamefacedly tried to conceal himself, whimpering and crying for his totems, his witch doctors and his charms. The craving of the sick man for magic is only to be equalled by his desire to seek security in authority, to be taken charge of body and soul. These primitive desires of the patient for magic and authority can, of course, be of real help to the physician in treatment, but it is a heady wine in the cup of magic, even when one is attempting to use it intelligently and honestly. Unless we are very careful we are apt in time to assume the air of infallible authority and to forget the limitations of our art.—"My dear, you must go and see Dr. *X*. He really is *the* most marvellous man. For once I've found a British doctor who does all sorts of blood tests and things just like they do on the Continent. He tells me there's something the matter with my glands and he's getting some new stuff from America to try on me. No one has ever used it here before. It will be thrilling if it works." And the poor wizard is really just a decent ordinary little chap, interested in golf and the growing of chrysanthemums, with a little more knowledge than the laity of anatomy and physiology, of diseased processes and the simple laws of health. If he could only resist the temptress in his patient and the tempter in his own psyche he would stop making an exhibition of himself by playing at being a wizard doctor and would give her some quite sensible advice that she

must really stop sacrificing her figure to her appetities and her indolence.

Incidentally our patients would be much more co-operative in treatment if we medical men took them more into our confidence and explained in simple terms the whys and the wherefores. This is done to a large extent in long-standing diseases like tuberculosis and diabetes often with the most excellent results, but the system is capable of a much wider application. On the whole we usually like to believe that our patients are much stupider than they really are and to adopt a Balaclava-like attitude to them—"Theirs not to reason why, theirs but to do and die." It is not at all uncommon, for example, to find women of the hospital class who have allowed themselves to be practically eviscerated by some surgeon without the slightest idea which organs have been removed, or the reason for their removal. Naturally there are some things which are best hidden—that a patient is likely to die in a few months from carcinoma of the bladder, or that his blood pressure is 240 systolic and 140 diastolic; and it is important to avoid the production of the valetudinarian patient, full of half-baked medical knowledge, so common in America, patients who prate to you *ad nauseam* about their blood ureas, their B. M. R.s and their cardiograms. But there is a happy medium, and in this country we usually err on the side of obscurantism. This atmosphere of mystery is, I think, a survival of magic. The magician has always been chary of admitting outsiders into the secrets of his necromancy, lest it be found to be not very wonderful after all. The magic circle of conjurors expelled the late Mr. Maskelyne from their coterie when he explained some of his tricks to the public. Necromancers have always been terrified of being found out to be just ordinary fellows.

Mystical Therapeutics

Perhaps we see the survival of magic in medicine most clearly in the sphere of therapeutics, which was defined by Voltaire as the art of pouring drugs of which one knew nothing into a patient of whom one knew less. This is perhaps not surprising when one considers that for about 100 years after Voltaire made his classical cynicism medical scientists were concerned not so much with therapeutics as with physiology, pathology and eventually bacteriology. Thus, almost at the same time as Laënnec was placing clinical diag-

nosis on a firm foundation, a group of black-gowned medical vampires were gathered round the childbed of the daughter of George IV discussing whether they should bleed the already exsanguinated girl for yet a third time; and no doubt up in Edinburgh, James Gregory was complacently prescribing twenty grains of calomel to one of the unfortunate lieges. At a period when Virchow was revolutionizing pathology and altering the whole conception of disease, the pharmacopœia was still a veritable museum of rubbish containing the relics of medieval superstition; and for some time after Koch had published his monumental work on the tubercle bacillus, frock-coated and top-hatted physicians continued to clap respirators over the noses of their tuberculous patients, to seal up their windows and to stoke the fires in their bedrooms; and even when Osler produced his classical "Textbook of Medicine" less than 10 per cent of the space in the first edition was devoted to treatment and much of this was taken up by vague statements—"arsenic may be tried; vaccines might prove useful; the general health should receive attention." The physician in 1910 who descended so impressively from his carriage in his top hat and frock coat to examine his patient, often with so much bedside skill, relied principally for treatment on elegant mixtures, delicately compounded, meticulously bottled and exquisitely labelled; but if 80 per cent of them had been poured into the sea the fishes would have been the only ones to suffer. It was all reminiscent of the witches in Macbeth:—

> "Fillet of a fenny snake,
> In a cauldron boil and bake;
> Eye of newt, and toe of frog,
> Wool of bat, and tongue of dog,
> Adder's fork, and blind worm's sting,
> Lizard's leg and howlet's wing,
> For a charm of powerful trouble,
> Like a hell-broth boil and bubble."

Even nowadays our therapeutic practice is still vastly concerned with magical polypharmacy—instead of with nutrition, fresh air, rest and exercise, wise and sympathetic advice, and with the prescription of single potent drugs in adequate dosage for definite and specific purposes. You may say: "But the public demand a good bottle and after all it often has a great psychological effect." Well, the public

often demand to have their spines tweaked by chiropractors, and that often has a great psychological effect. What we condemn in others we should not condone in ourselves. We should rather educate the public in rational therapeutics and not pander to its primitive desires, even though the desire to take medicine seems to be the chief thing which differentiates man from the lower animals.

Polypharmacy

Just think of the ready sale through the medical profession of polyglandular pills—little bits of suprarenal, testis, ovary, and pituitary, all mixed up together and not one of which is active when taken by the mouth. It is a return to the medicine of savages, who believe that if you eat the heart of a lion you will grow strong—indeed there is more scientific basis for that savage belief since there must be much good first-class protein in the heart of a lion; and think of the number of practitioners who imagine that their responsibilities in a case of peptic ulcer are liquidated by the prescription of a bottle of white medicine to be taken three times a day, or that a broken heart can be healed by ten grains of potassium bromide (modern counterpart of a love philter).

Of course, I realize the difficulties; a hard day and ten more visits still to make, the waiting room full of patients for the evening surgery and a midwifery case with the head almost in the perineum clamoring for attention. What time is there to arrange a complicated course of potent drug treatment or to give advice as to conduct, fresh air, exercise, and nutrition? But it only takes a minute or two to "sound" the patient—through her blouse—and to dash off a prescription for a pink bottle. That, however, is a reason, not a justification for the system, which must be wrong. We should not, therefore, be too alarmed at the experiments which are likely to be made in the near future to try new systems. It is not as though the present one was all that good.

Even among the rising generation of doctors old magical tendencies die hard. When, for instance, I lecture to my students on the practical details of food—how to cook cabbages, the advantages of porridge and suchlike—I often hear a titter from my audience. "Hark at him," the titter seems to say, "talking about things that are the prerogative of mother," and they sit back with an indulgent smile. But when I say—which I seldom do—"You can if you like in

this condition prescribe a diaphoretic mixture—potassium citrate 20 grains, aromatic solution of ammonia half drachm, water to half an ounce," how the notebooks open and how the pencils flash! "This," they seem to say, "is the real Mackay; now he's getting down to tin tacks." No, until the medical profession can emancipate itself from mumbo-jumbo, until we cease to be peddlers of pills and potions like cheap-jacks outside a fair, we have no real claim to be members of a learned profession; we are not much better than the quacks and charlatans we criticize.

Look Up the Textbook

Has it ever occurred to you that we have trained the public to expect an *ex cathedra* pronouncement from us on extremely important subjects on the spur of the moment and without any time for consultation or thought? A judge or sheriff-substitute frequently takes his opinions, as they call it, to *avizandum*. That is, after hearing a difficult case argued before them they go away and consider it sometimes for weeks or even months before delivering judgment. Not so the doctor—he is expected to say at once, on the spur of the moment, without the slightest hesitation or time for cogitation, off with his leg, chop out her uterus, spend the winter abroad, give up work, change your employment, don't get married, take this large dose of poison. The doctor has trained the public to think it very odd if in a difficult case, after hearing the history and making his examination, he were to reach down a textbook from the bookshelf and spend a few minutes consulting it before delivering his verdict. The only way out of certain difficulties, which is considered perfectly proper, is for him to say, "I'll call in another wizard, who has confined his necromancy to this subject only and whose spells will therefore be peculiarly efficacious in your case." Many such consultations would be quite superfluous if the first wizard felt it was not derogatory to his magic to look up a textbook.

Even in the matter of the dosage of the less common drugs, which no one can be expected to carry in his head, except a third year medical or pharmaceutical student, it is considered very shocking to look them up in the patient's presence before writing the prescription, and absurd subterfuges are resorted to so that the magician can have a moment alone with his pocket prescriber. All this arises from the desire to impress—it is a survival of magic in

medicine—and it is wearing pretty thin. We should say much oftener to patients, "Look here, this is not a very easy problem and the correct solution of it may make all the difference to your future happiness. So I want to think about it and look up a few books about it. Come back again in two days' time, and I'll be in a much better position to advise you than I am now."

A Nobler Mysticism

In these remarks I have tried to suggest that there is still in medicine a good deal of occultism and intellectual obscurantism, and that our therapy is still all too often inclined to degenerate into magic both white and black; that the immense progress made by medicine during the past fifty years and also its earlier successes may be traced back to the introduction by Galileo of the inductive, as opposed to the deductive, method of thought, to the development of the scientific rational spirit and the disregard of mystical influences. Mysticism, as popularly understood, is often considered to be synonymous with every form of intellectual obscurantism and superstition, with magic spirit-tapping, crude communications with the dead and all sorts of quackish medical equivalents. In tilting against mumbo-jumbo in medicine and in making a plea for a more rational approach to it, however, I would not have you believe that I exclude the possibility of a nobler mysticism which, while transcending the ordinary facts of the phenomenal world, does not lose touch with reason.

DETROIT PUBLIC LIBRARY

A REMARKABLE BEAN IS THE SOY

By T. Swann Harding

YOU may not think so, despite Chinese opinion to the contrary, for the fresh soybeans you may have tried to eat probably had a faint flavor about them suggesting a dash of crankcase oil. On the other hand the margarine and certain other fatty foods you may eat prove quite palatable and contain liberal helpings of soybean oil. The soybean is, in any case, more than a mere legume; it rather resembles an institution.

From the standpoint of nutrition nothing in the vegetable world equals it for a moment. It is not only high in calcium, phosphorus, iron, thiamin and niacin, but it provides a far higher yield of excellent protein much more economically than any other field crop—dry beans, corn and wheat included. On the other hand the production of edible protein via chickens, eggs, hogs and beef cattle is as costly in terms of total farm and non-farm resources as if it were derived from carrots or grapes!

For the only way to measure the true cost of a crop is to inventory its production in terms of farm labor, use of equipment, feed, fertilizers, and drain on the soil required to produce the fat, protein, carbohydrates, minerals and vitamins the crop contains. Thus a standard can be established by which the relative cost of the same food elements, if derived from other crops or commodities, may be estimated. On any such basis soybeans win hands down.

Specifically, you set up a unit of resources, and then measure the cost of producing protein, for instance, in soybeans as compared with the cost of producing it in sheep or watermelons. Such a unit might consist of one acre of land, a hundred hours of labor, the farm resources required to produce ten dollars worth of farm products and the farm and non-farm resources required to produce ten dollars worth at retail in a selected period—say 1935-39.

Per one hundred pounds of the farm product produced, soybeans give far and away more total nutritive value or units than any other crop, livestock included. The only other crops that are even half so good are whole wheat (not white) flour, hogs, dry beans, peanuts

and carrots. Let that sink in during a period when the world is short on food and the great need is to produce the most nutritive elements at the least possible cost in effort and resources.

When it comes to the average yield per acre of individual food elements, soybeans are exceeded only by rice and potatoes in energy value and by peanuts in fat. They are far, far above any other field crop in protein, calcium, phosphorus, iron and thiamin production. They are exceeded only by dry peas, potatoes and sweet potatoes in vitamin A and by only whole wheat flour and both potatoes again in niacin. They lack vitamin C.

On a basis of the hours of labor required to produce a unit of the various nutritive elements, soybeans exceed all other crops in energy value, protein, fat, calcium, phosphorus, iron, thiamin and riboflavin. They are exceeded by sweet potatoes for producing vitamin A and by whole wheat flour in niacin production. Most other crops exceed them in producing carbohydrates and again there is their vitamin C lack. However, soybean sprouts are rich in C.

On a basis of total farm resources used to produce the food elements in unit quantity, soybeans are outstanding in production of protein, fat, calcium, phosphorus, iron, thiamin and riboflavin. They are exceeded by sweet potatoes in vitamin A production, by whole wheat flour in niacin production and by many crops in carbohydrates. But our world diet is already heavily overweighted with carbohydrates. However, soybeans have great non-dietary significance, however far they would go, if permitted, towards helping make up world food deficiencies.

Take soybean protein. It represents an admirable mixture of amino acids and rates high in biological value, meaning that it is nearly as good a food as lean meat. But it does not have to be eaten. It has many present and many more potential industrial uses. Remembering that a bushel of soybeans can be produced with an average of ten minutes of man labor, that fact is important. Soybean protein can be produced at low cost and used for something other than high-grade stockfeed.

Dehulled soybean meal is about one-half protein. This can be isolated from it, but the meal, made from the press cake after the oil has been expelled or extracted, has many uses in its own proper person. Soybean meal glue was introduced to the plywood industry as early as 1927 and played a big part in development of this product.

Today soybean glue is used more for this purpose than any other adhesive. It is also used for coating wallpaper, in making high-grade paper boxes, for the brush coating of paper, and in the construction of fiberboard and packaging. Its low price, good adhesive strength and water resistance give soybean meal glue itself a big industrial market.

But the protein can be isolated from the meal and, because it is light in color, is excellent for coating paper, paper sizing and the making of textile fibers and water paints. Here it competes somewhat with casein. But the quantity of casein that can be produced is limited by milk production of which it is a byproduct, while as much soybean protein can be produced as is desired.

Moreover vegetable proteins have animal proteins under a handicap from the start because it takes from six to ten pounds of the former merely to produce a pound of the latter. Since soybeans form flakes when they pass between smooth rolls, and these are easily adapted to solvent extraction, soybeans have a decided advantage over other oilseed like cottonseed, flaxseed, peanuts or corn when it comes to making purified protein. Soybean protein already stands above milk casein and second only to packing house byproducts in commercial importance.

Protein molecules are large and exceedingly temperamental. It will take a lot of research yet before we know all that can be done with them. But soybean protein has already made a place for itself for paper coating and sizing, in making water paints, textiles and shot-gun casings, as a washing compound adjunct, and a foam stabilizer in fire extinguishers. It is in an advantageous position for further expansion.

After the protein is made from soybean meal a whey disposal problem arises. For a solid residue remains, containing a high percentage of unextracted protein. It is good for use in feed mixtures or in the making of plastics. Then there is a dilute water solution of about one-third the original meal, the so-called "whey." It contains protein and sugars which should be recovered as its disposal otherwise offers a stream-pollution problem. Research is under way here.

Department of Agriculture scientists developed the use of soybean-protein adhesive in making shotgun-shell casings. The casein supply got tight, most non-agricultural synthetics were unsuited to

the operation, so experiments were made with the soybean-protein adhesive. The shell casings so made proved to be tougher, more leathery, and more water resistant than those manufactured by the use of casein glue. Commercial production began only a few months ago.

Turning now from the protein to the oil, several problems cropped up. For instance it had long been assumed that the soybeans lost oil during storage, hence they sold off after a period in commercial storage. Work at the Department of Agriculture's Northern Regional Research Laboratory in Peoria disproved this theory. Since representatives of the industry participated in this work the habit of paying farmers less for stored soybeans, on the assumption that their oil content had decreased, was discontinued.

New methods have also been developed for determining the composition of the oil, particularly its content of drying components. Their determination has always been difficult and time consuming. Investigation proved that the methods used are also inaccurate. New laboratory studies resulted in improved methods of measuring the drying components in vegetable oils, and this is destined in time to better the quality of paint generally.

Moreover, work at this Northern Laboratory in Peoria has resulted in several important new developments in the making of paints and varnishes from soybean oil. The oil has been modified by the addition of other oils and also by chemical treatments which improve its drying properties. Substances that retard drying have also been removed from the oil. The paint pigments have been varied over a wide range.

Thus soybean oil paints that dry much more quickly have been formulated. They are suitable for outdoor use. The coatings are not sticky after being air-dried a few days, nor does stickiness develop later after exposure to the sun's heat. If the pigments contain a little lime even 100 per cent soybean oil paint coatings do not pick up dirt. Thus the objectionable features of soybean oil for this use have been overcome.

Furthermore a soybean oil paste, containing a proper mixture of pigments and driers, is now sold to farmers commercially, enabling them to produce low-cost paint for outdoor use merely by adding soybean oil. Thus the first commercialized 100 per cent soybean oil paint has been developed and made available.

The chemists at the Peoria laboratory also take the oil to pieces and tailor its fractions for special purposes. Each fraction is superior to the original oil for certain uses. The oil is fractionated by permitting it and furfural (which can be made cheaply from corncobs) to flow counter-currently in a vertical tower. Exterior white paints made from the fast-drying fraction equal those made with raw linseed oil—indeed they proved somewhat better on test panels.

The other or edible fraction was processed into a shortening and, even when soybean oil alone was used, was adjudged very desirable by shortening makers who performed the tests. Ordinarily only one part of soybean oil to two parts of cottonseed or peanut oil is used in such shortenings. Developmental work is in progress.

Flavor stability to give soybean oil a long shelf life is also a factor. The German vegetable oil seed processing industry had this problem licked before the war. Their know-how was reported here and trials were made at the Peoria laboratory.

Work has been pushed vigorously and progress has been made. The addition of citric acid, after thorough degumming and during deodorization of the oil, has increased its shelf life appreciably. Improper or excessive heating of the oil during processing must be avoided. The work has made it necessary to measure the flavor of the oils after keeping so as to detect the first faint signs of deterioration.

This is done by using an unusually large panel of experienced tasters and making a statistical analysis of the final results. The procedure developed has been a distinct contribution to this type of measurement which is used also on tea, wines and many other food products. Several industrial concerns have adopted the procedure developed at the Peoria laboratory.

Further progress has been made in the production of the synthetic resin, Norelac, which is made by suitable chemical modifications of soybean oil. Production has passed through pilot plant and semi-commercial stages and commercial production is under way. Norelac is used in the main as a heat-sealing agent in the packaging of foods, and in food preservation generally, though new uses are being found constantly.

A final oddity in the research on soybeans leads to recapture of the Chinese art of making soya sauce and its placement on a scientific basis. In this work Mr. Pei Sung King, of the National Bureau of

Industrial Research, Chungking, cooperated. While obtaining experience in penicillin production he imparted information on the making of soya sauce.

Detailed recipes for this fermentation process have been handed down in China from generation to generation. To facilitate translation of the traditional art into American factory processing, the Northern Regional Research Laboratory undertook a broad program in selecting strains of organisms and standardizing the fermentation procedure so that a high-quality sauce could be produced consistently. As a result an excellent soya sauce is now made using a thirty- to ninety-day fermentation of the beans.

The starter used consists of a mixture of two molds developed on cooked rice, a yeast that works on soya broth and a bacterium which ferments the broth. These must be blended in suitable proportions and at the proper stage of development to produce a fine end product. The two molds, the yeast and the bacterium are now maintained in pure culture at the laboratory and rendered available to processors as desired.

Thus a concern can make a fresh start with new, pure cultures when engaging in soya sauce production. Stock cultures can be discarded when and if contaminated with wild molds or yeasts, the weeds of the winds which so easily seed in to injure the quality and uniformity of the final product. All this is a far cry from Chinese household arts, but it adds further proof, if needed, that the soybean is indeed a wonderful institution.

SELECTED ABSTRACTS

Sulfamerazine Treatment of Pneumonia in Adults. H. Joules and S. D. V. Weller. *Brit. Med. J.* No. 4536, 947 (1947). In a series of 113 cases of primary pneumonia in adults treated with sulfamerazine no deaths resulted. Five deaths occurred in another group of 76 patients treated with other agents, e. g., sulfamezathine, penicillin or combined therapy.

The oral dosage schedule found satisfactory by the authors consists of an initial amount of 3 Gm., followed in eight hours by 2 Gm., and then 1 Gm. doses at eight-hour intervals. It is stated that a blood level of 15 mg. is reached within four hours, and that it is well maintained throughout the course of treatment. In order to maintain adequate urinary output, six pints of fluid must be administered daily, but alkali is not required.

The total dosage of sulfamerazine averaged 16.5 Gm. in the mild cases and 19-20 Gm. in those which were more severe. It is stated that in most cases the patient's temperature returned to normal in from twenty-four to thirty-six hours. Treatment should be continued for an additional forty-eight to seventy-two hours, requiring about five days of therapy (about 18 Gm. of sulfamerazine).

The authors emphasize the necessity of radiological examination before discharge of patients, and of adequate convalescence.

Prevention of Renal Damage by Use of Mixtures of Sulfonamides—Animal-Experimental and Clinical Studies. D. Lehr. *Brit. Med. J.* No. 4536, 943 (1947). Experimental studies performed on albino rats and clinical observations on more than 700 unselected patients with systemic infections showed that a mixture of two or more sulfonamides combines high therapeutic efficacy with remarkably low renal toxicity.

The animal experimentation included studies on drug toxicity (acute, subacute and chronic) and on absorption and excretion of sulfadiazine, sulfathiazole, sulfamerazine, sulfapyridine and sulfapyrazine administered singly and also in mixtures containing either two or three of these compounds.

The author has previously reported the results of *in vitro* experiments on the bacteriostatic activity of mixtures of different but similarly effective sulfonamides. In general, their action is additive, corresponding to the total content of sulfonamide. True potentiation of effect was observed in some instances.

In the clinical investigation a mixture containing equal amounts of sulfadiazine and sulfathiazole, or sulfadiazine and sulfamerazine, was administered on a routine dosage schedule. In most instances the oral route was used, although in children the sulfadiazine-sulfamerazine combination was also given subcutaneously. Adequate fluid intake was provided, but no alkalizing agents were administered.

In solution each sulfonamide component of the mixture behaved as if it were present alone, exerting no influence on the solubility of the others. Therapeutically effective blood levels of sulfonamide (5 to 20 mg. per 100 ml.) were easily maintained. Urinary concentrations of sulfonamide varied between 100 and 600 mg. per 100 ml. The incidence of crystalluria was much less than has been reported to accompany the administration of a single sulfonamide, *viz.*, 7 per cent for the mixture, as contrasted to 29 per cent for sulfadiazine, 26 per cent for sulfamerazine and 70 per cent for sulfathiazole.

The use of mixtures appeared to reduce the frequency of allergic reactions to the sulfonamides. The only toxic reactions noted were infrequent instances of nausea and vomiting.

Reference is made to several recent publications of other authors confirming these observations. Two of these investigators have concluded that for the prevention of crystalluria the use of the mixture was as effective as the administration of sodium bicarbonate in a daily dosage of 12 Gm. with either sulfadiazine or sulfamerazine.

At present the author is conducting clinical studies with various mixtures of three sulfonamides.

Ammi majus Linn. I. R. Fahmy and H. Abu-Shady. *Pharm. J. 105,* 303 (1947). The authors report a phytochemical examination of the fruits of *Ammi majus* Linn., collected from plants growing wild in the Nile Delta region of Egypt. This drug, in the form of a yellowish-brown powder, and known in Egypt as "Aatrillal," "Gazar El-Shaytan," and "Regl El Ghorab," is used in the treatment of leucoderma, being administered in daily doses of 4 to 12 Gm.

Large doses of it are said to cause nausea, vomiting, malaise, faintness and coma.

Clinical trials of a soft alcoholic extract of the drug led to promising results in leucodermic patients, and the drug was therefore subjected to examination. By extracting the powdered fruits with petroleum ether (b. p. 60°-70° C.) a greenish-yellow resinous mass was obtained, from which a crystalline principle termed ammoidin separated. After purification by dissolving in chloroform, shaking out with 2 per cent sodium hydroxide solution, and recrystallization from benzene, followed by water, this compound was obtained in the form of colorless, light, silky, prismatic needles, m. p. 148° C.; yield, 0.5 per cent.

Ammoidin has the molecular formula $C_{14}H_8O_4$ and is an unsaturated aromatic compound containing methoxyl groups. Tests for alkaloids, glycosides and phenols were negative. Its pharmacological study has not yet been undertaken.

The Preparation of Penotrane Cream. L. N. Firth and J. Rhodes. *Pharm. J. 105,* 322 (1947). The following formula was developed as an ointment base for "Penotrane" (phenylmercuric diphenylmethane disulfonate), a new water-soluble compound manufactured by Ward, Blenkinsop & Co., Ltd.

A glyceryl monostearate base was found to be most suitable, since Penotrane is stated to be most effective if the ointment base into which it is incorporated contains at least 40 per cent of water. The formula of the base was as follows:

Light liquid paraffin	20 mils
Glyceryl stearate, self-emulsifying	20 gm.
Water	60 mils

Incorporation of the powdered chemical into the slightly warmed base resulted in a smooth homogeneous cream. Creams of both 1 and 10 per cent concentrations were prepared.

In clinical trials the preparation was found to be effective in the treatment of seborrheic intertrigo and seborrheic sycosis.

Use of BAL in Lead Poisoning: A Preliminary Report on One Case. J. G. Telfer. *J. A. M. A. 135,* 835 (1947). The patient had acquired lead poisoning by mixing and applying paint, and prior to admission to the hospital had experienced abdominal cramps and disturbances of bowel habits. Upon examination he was found to have the "lead line" of the gums, a "pasty" coloration of the skin, an apparent apathy, and the secondary anemia and the significant amount of basophilic stippling of the red blood cells characteristic of lead poisoning.

The determination by the dithizone method of the amount of lead present in twenty-four-hour specimens of urine gave low values. Although 0.150 Gm. of lead per liter is considered the lowest figure indicating absorption of this substance, five specimens collected from the third through the eighth day contained only 0.010 to 0.040 mg. per liter.

From the eleventh through the thirteenth day the patient received a course of twelve intramuscular injections of BAL (10 per cent in oil) in doses of 1.9 mg. per Kg. of body weight. From the eleventh through the seventeenth day, the lead content of the urine increased to amounts varying from 0.20 to 0.50 mg. per liter.

On the twenty-ninth day, a second course of BAL therapy was started; the dosage was 2.5 mg. per Kg. of body weight, administered four times daily for a total of nineteen injections. During these five days the lead content of the urine varied from 0.53 to 1.16 mg. per liter.

The patient was discharged from the hospital shortly afterward. When seen twenty days after the last BAL injection he appeared to be in good health, although the "lead line" of the gums persisted.

The author concludes that BAL deserves further trial as an aid in the diagnosis and treatment of lead poisoning.

Tryparsamide Optic Neuritis Treated by 2,3-Dimercaptopropanol (BAL). S. Friedenberg. *J. A. M. A. 135,* 1072 (1947). The author presents a report of the first case of tryparsamide optic neuritis treated successfully with BAL. When first seen, the patient complained of nocturnal enuresis and daily frequency. Following examination a diagnosis of tabes dorsalis was made; an atonic bladder was considered to be responsible for his complaints.

Over a period of several months the patient received two courses of iodobismuthite sodium administered intramuscularly and one course of penicillin.

Following the intravenous injection of two doses (0.7 gm. and 1 gm.) of tryparsamide a week apart, the patient complained that he could not see the sidewalk when walking. Gross examination revealed the development of optic neuritis.

BAL therapy was started immediately, the patient receiving 300 mg. doses twice daily on the first two days, and 300 mg. daily for the following eight days, with the exception that 400 mg. were given on the fifth day.

Vision returned nine days after BAL therapy was stopped. Some months later the patient stated that his vision seemed normal except for occasional blurring. Several references are made to the literature regarding the symptoms of involvement of the optic nerves following tryparsamide therapy.

"Cam-aqi": A New Antimalarial. A. T. W. Simeons and K. D. Chhatre. *Ind. Med. Gaz.* May 1947, p. 255 (through *Pharm. J. 105,* 434 [1947]). The authors present a preliminary report on a new drug which chemically is 4(3′-diethylaminoethyl-4′hydroxy-anilino)-7-chloroquinoline dihydrochloride dihydrate, a yellow crystalline powder having a solubility of 1:5 in water at 25° C.

Experiments on laboratory animals revealed that its acute toxicity is about that of mepacrine (Atebrine); on prolonged administration, however, it is only one-fourth to one-half as toxic.

It is stated that the paper reports that no toxic effects were observed in a series of fifty cases treated with the drug in doses of 10 mg. per Kg. of body weight, and that 314 patients have been treated without ill effect. No discoloration of the skin occurred.

The above dosage was found to be the minimum amount for satisfactory results in both types of malaria, although clinical attacks could be controlled with half this dose.

The following dosage is suggested: infants up to two years, 100 mg.; two to five years, 200 mg.; five to fourteen years, 300 mg.; average South Indian adults, 400 mg.; tall or heavy adults, 600-800 mg.

Clinical Trials of Paludrine. *Ind. Med. Gaz.* May, 1947, pp. 247, 253, 257 (through *Pharm. J. 105,* 434 [1947]). Three separate reports are made on clinical trials of Paludrine in malaria by the following investigators:

(1) R. N. Chaudhuri and M. N. Rai Chaudhuri. In a series of eighty cases the drug was administered in either (*a*) a single dose of 100 mg., (*b*) a single dose of 300 mg., or (*c*) a dose of 100 mg. three times a day for four days. All patients became afebrile in 2.4 to three days and free from asexual parasites in 2.3 to 2.6 days.

(2) J. G. Parekh and B. P. Boghani. Similar successful results were obtained in the treatment of fifty cases. Paludrine was considered to be equal or superior to other antimalarials. Six patients exhibited toxic symptoms: weakness, drowsiness, urticaria, and vomiting with diarrhea.

(3) M. N. De and P. N. Dutta. Various doses of the drug were used in the treatment of fifty-eight cases. No toxic effect attributable to the drug was observed. It appeared to be effective against relapse, although the patient became liable to re-infection by the parasites as soon as the drug had been excreted from the system.

BOOK REVIEWS

The Dispensatory of the United States of America, 24th Edition (U. S. D. 24th). By Arthur Osol, Ph. G., M. S., Ph. D., and George E. Farrar, Jr., M. D., F. A. C. P., with other collaborators; 1928 pages incl. index; J. B. Lippincott Co., Philadelphia, London and Montreal; 1947; Price $16.50.

Probably no book in American Pharmacy and Medicine has been held in higher esteem as an authoritative reference and text throughout the last century than the United States Dispensatory. The twenty-fourth edition will unquestionably continue to maintain the book's high reputation and usefulness.

One misses at once the name of "Wood" from the cover for this is the first time since its inception in 1833 that this illustrious name has not appeared as one of the senior editors. The Editor in Chief of the twenty-third edition, Dr. H. C. Wood, Jr., still, however, is listed as Advisory Editor, having been succeeded by Dr. Arthur Osol, the other senior editor of the twenty-third edition.

The new Dispensatory has of course been revised in accordance with the U. S. P. XIII, the N. F. VIII and the Seventh Addendum to the British Pharmacopoeia. Employing the new style of the official books in the United States, drugs in Part I are now listed according to English title, which system seems to possess a number of advantages.

Certain other innovations deserve mention. Considerably more space is devoted to the therapeutic uses and the dosage schedule of drugs. This should increase the usefulness of the book to the medical profession and it must be admitted that pharmacists, too, today are becoming more interested in the pharmacology and therapeutics of medicinal agents. Another change has been made in that official tests and assay procedures instead of being quoted *verbatim* are now given in brief with a commentary on the underlying reasons involved for various steps. This greatly enhances the value of the book as a reference since such explanations are totally lacking in

the official compendia. The inclusion of the name of the manufacturer of a proprietary as well as the proprietary name itself remedies a defect found in former editions since this information is often of considerable importance in seeking a source of supply. Finally, a new section on veterinary medicine has been added. This field is growing to sizable proportions in the United States and pharmacists, particularly, have few sources of reliable data on this subject.

In scanning the book it is immediately apparent that the entire editorial staff has done a most careful and thorough job in revising the twenty-third edition and in the incorporation of new material. The twenty-fourth edition is in truth a new book. This reviewer never remembers a poor edition but surely none was ever prepared in a more commendable fashion.

In view of the dearth of really satisfactory references and texts in the field of pharmacy it is difficult to refute the argument that the U. S. D. 24th is the most valuable book in American pharmacy today.

L. F. Tice

Pharmacognosy. By Edmund N. Gathercoal, Ph. G., Ph. M., and Elmer H. Wirth, Ph. C., Ph. D. Second edition, 756 pages, 372 illustrations and 3 colored plates. Lea and Febiger, Philadelphia, 1947. $10.00.

The appearance of the Second Edition of this standard textbook and reference work, thoroughly revised and up-to-date, will be greeted with approval by all those who have to do with pharmacognosy in any of its phases. It has been noted for its emphasis on the chemical aspect of pharmacognosy while not neglecting the purely botanical, its authenticity, its readability and its excellent illustrations.

The present edition retains the taxonomic arrangement of drugs. The monographs on the more obsolete items have been reduced, and new sections, written by specialists, have been added reflecting the increasing consciousness that pharmacognosy is dynamic, not merely static; is broad not narrow; may be a valuable tool in the hands of the modern pharmacist and a profession in its own right.

Among the additions to the work are the following: (1) a section concerning drug plant cultivation with photographs taken at the University of Illinois Drug Plant Experimental Station, (2) expanded discussions of plant chemistry (alkaloids, glycosides, tan-

nins, fixed oils, volatile oils, etc.), distributed at appropriate places throughout the text, (3) a section concerning antibiotics (penicillin and streptomycin), (4) a rewritten section on vitamins, (5) a rewritten section on endocrine products, and (6) a new monograph on allergenic preparations. The monograph of each drug is introduced by its complete official history.

The useful key for the identification of powders is retained.

M. S. DUNN

A Manual of Pharmacology and Its Application to Therapeutics and Toxicology. By Torald Sollman, M. D. Seventh Edition. 1132 pages incl. index. W. B. Saunders Co., Philadelphia and London, 1948. Price $11.50.

"Sollmann's Pharmacology" has long been a standard text for students of medicine and pharmacy. It has always leaned toward the practical side of the subject just as some other books are predominantly theoretical or experimental. The selection of a text is largely a matter of the personal feelings of the teacher and those who believe in teaching pharmacology in such a way that the student learns something about uses, doses and other practical data will find in this new edition the same sound treatment of the subject as always. As it often happens today the teacher of pharmacology is a research or experimental pharmacologist and his students sometimes make the mistake of considering human patients in the same category as dogs and cats with statistical results the final objective. Such students would do well to have a copy of Sollmann so that both sides of the subject will receive attention.

The experimental pharmacologist will find the book, as heretofore, too practical and more a "materia medica" than a treatise on pharmacology. In this they are right and it may be expecting too much for any one book to cover all aspects of pharmacology in an adequate manner.

The seventh edition seems to have been revised in a creditable manner and much new material has been included. The use of a two-column page is an improvement since it has been proven that for large pages this type of format provides much easier reading.

L. F. TICE

A Survey of Pharmacology and Experimental Therapeutics. By Hamilton H. Anderson, Fumiko Murayama and Benedict E. Abreu. 368 pages. University of California Press, Berkeley and Los Angeles, 1947. Price $6.50.

This book represents a compilation of significant data in the field of pharamacology and experimental therapeutics over the period 1941-1946. It is not a text book in any sense of the word but a summary of the latest data combed from the extensive literature of medicine, biology, dentistry, pharmacy and pharmacology.

The text is so arranged that under each drug listed there appears a series of brief abstracts of important work done on this substance with the references appended. Quantitative data relating dosage to specific effect are stressed and the *in vitro* as well as *in vivo* effects are listed separately.

The book does not attempt to duplicate the material found in standard works on pharmacology but only to record recent research on the drugs covered. The antibiotics, antimalarials and sulfonamides are deliberately omitted since the authors felt that the several annotated bibliographies on these subjects were adequate.

This survey provides much of interest to the research worker, teacher and graduate student and it serves a very useful purpose in any library. The compilers seem to have done a careful and thorough job in preparing their material. It is of such a caliber that one can readily endorse the continuation of this project during the years to come. The W. W. Crocker Fund at the University of California Medical School which supports this work is indeed financing a most worth-while project.

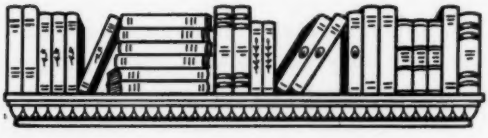
Modern Cosmetology. By Ralph G. Harry. Third Revised Edition. 515 pages incl. index. Chemical Publishing Co., Inc., Brooklyn, N. Y., 1947. $12.00.

The author of this work has long been associated with the field of cosmetics. He is at present Head of the Cosmetic Department of the Beecham Research Laboratories, Ltd. (England) and was formerly Manager of the Toilet Preparations Research Laboratory of Lever Brothers and Unilever Ltd.

The book presents the subject of cosmetics in a very broad way and it is unique in that every effort is made to correlate the subject of dermatology with the art and science of cosmetic formulation and manufacture. The physiology and anatomy of the skin is so discussed with photographs and illustrations that the cosmetic worker will gain a better understanding of just what can be accomplished with a cosmetic product and its limitations.

The English origin of the book may cause some slight objection to its use by those in the United States but trade names are used only infrequently so that one can identify ingredients without difficulty. The reader also may have a vague or even pronounced feeling that American cosmetic development is somewhat advanced beyond that described by the author in England.

This reviewer can recommend the book as a useful reference but it is somewhat high in price in spite of its value.



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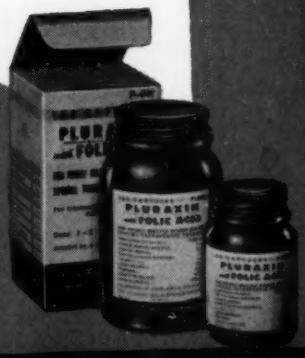

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